**REMARKS:**

By the above amendment, Applicant has rewritten all claims to define the invention more particularly and distinctly, and to overcome the rejections and define the invention over the prior art.

**DC Power for Controller**

To response to Applicant's prior argument, the Examiner noted that the claims did not mention the source of DC power for the controller. Claims 17-20 were rewritten as claims 27-30 with the addition of

"g) means for deriving a source of a constant DC voltage power from a small portion of every half AC cycle or full AC cycle, which appears across said thyristor in each of said ON thereof and for supplying said constant DC voltage power to said microcontroller."

**Prior Rejections of Claims 11-20 as being anticipated by Bensoussan et al. (U.S. Patent 5,025,134) Are Overcome**

The rejection of claims 11-20 was based on Bensoussan which was held to show 'cycle stealing' via at least the rectifier 30 and capacitance (31) resistance connected to the regulator.

Bensoussan's invention does indeed derive its DC power from AC power using the rectifier and capacitance resistance connected to the regulator. Applicant's invention has corresponding components, but is connected differently than Bensoussan's design so as to derive DC power and also control the thyristor. Bensoussan's design requires a number of whole AC cycles to be consumed or "stolen" in order to provide power to the control

unit. However, when the device is supplying power to the load, the Bensoussan's unit does not derive DC power from any AC cycles. If the large capacitor discharges below a certain level, Bensoussan's unit turns OFF power to the load until a number of whole AC cycles are "stolen". This method of deriving DC power limits the application of Bensoussan's design to applications that do not require continuous operations. For example, one cannot dim an incandescent light using this method. Bensoussan clearly states this feature in his claims: "said electronic switch to open for a whole number of power supply cycles from said first power supply so that said means for storing electrical energy of said second power supply is charged from said first power supply," (column 7, lines 45-50, column 8, lines 33-37, column 10, lines 8-12).

Applicant's invention does not "steal" entire cycles like Bensoussan, but instead derives a source of DC power from said AC power flow by stealing a small portion of every AC half cycle or full cycle when in the ON state to charge a small capacitor. In applicant's invention the DC power is derived (i.e. stolen) from a small portion of every half or whole cycle when the unit is in an ON state and applicant's control scheme allows for precision control of the power to the load continuously. Applicant's method therefore allows, for example, for dimming an incandescent light from any level of brightness from OFF state to full ON state.

In short, Bensoussan control technique is to turn ON the power to the load after a number of AC cycles has charge up the large storage capacitance. The applicant's control technique is to control the power to the load every half or full cycle after deriving the necessary DC power from a portion of the every AC half or full cycle. Bensoussan noted his limitation in column 6, lines 53-59: "the present invention can be applied to any power

dissipating device for which a whole number of power cycles can be removed without disturbing its operation so that this whole number of power supply cycles can be used for energizing a controller according to the present invention."

Applicant's claims have been rewritten to point out this distinction to make it clear that the claimed invention does not consume whole cycles of AC power in the manner of Bensoussan, the claims expressly recite that the claimed invention derives the DC power from a small portion of every half AC cycle or full AC cycle which appears across said thyristor in each said ON state thereof. The claims further specify a control technique of applying current pulses at a specified time dictated by a control unit at any time in said AC half or full cycle and after the deriving said DC voltage.

In summary, Bensoussan does not show an apparatus or method in which DC power is derived from a small portion of each AC half or full cycle. Applicant therefore respectfully submits that Bensoussan fails to anticipate new claims 21-30.

**The Rejections of Claims 11-20 as being anticipated by Pearlman et al. (U.S. Patent 4,649,323) Are Overcome**

Claims 11-20 were rejected over Pearlman because the prior claims did not expressly state the functions are within the single lead. The Examiner also stated that Pearlman looks to be a one-sided and uses a single lead.

Pearlman in fact makes no mention of how to derive DC power from a one-sided configuration. In particular, he makes no mention of cycle stealing a portion of an AC half or full cycle in the ON state. From the figure and the description, the DC power supply, zero-crossing detector, and the thyristor are connected to the 120 VAC mains in a parallel configuration. Figure 1 shows the parallel configuration.

The claims were rewritten to emphasize the cycle stealing a small portion of an AC half or full cycle in the ON state and also to emphasize the one-sided configuration. Claim 21 states: "A method for switching AC power flow through and deriving a supply of DC power from one side of an AC power circuit." Claim 22 states: "An electrical current control apparatus for operatively interconnecting one side of a source of AC current with an AC load." Claim 25 states: "An apparatus for selectively energizing an AC electrical load from one side of an AC power circuit." Claim 26 states: "An apparatus for energizing an AC electrical load from one side of an AC power circuit." Claim 27 states: "a switch housing mountable within the interior of dwelling connected to one side of AC power supply and to one side of the said AC electrical load."

The claimed invention is now expressly limited to the one-sided configuration. Pearlman does not show any device with a one-sided circuit and therefore fails to anticipate new claims 21-30.

**The Rejections of Claims 11-20 as being anticipated by Simmons (U.S. Patent 5,481,452) Are Overcome**

Claims 11-20 were rejected over Simmons for essentially the same reasons as with Pearlman.

Simmons does not teach any cycle stealing and Simmons' invention derives power from a parallel connection to the AC power lines as shown in Figure 4 of the reference. When attached to a one-sided configuration, Simmons' invention uses a battery 6 (see Figure 3) and does not derive DC power from the AC cycles as in Applicant's invention.

The Applicant's invention addresses the one-sided configuration that uses no battery. The claims were rewritten to emphasize the cycle stealing a small portion of an AC half or full cycle in the ON state and to emphasize the one-sided configuration.

The Applicant's invention expressly limited to the one-sided configuration. Simmons does not show any device which "steals" a small portion of the AC cycles when attached in such a configuration, and therefore fails to anticipate new claims 21-30.

**The Rejections of Claims 11-20 as being anticipated by Weber (U.S. Patent 5,481,452) Are Overcome**

Claims 11-20 were rejected based on Weber's patent on grounds that the manner of charging the control device was considered similar to applicant's.

Weber has a rectifier, capacitor, and regulator like applicant's invention, but these are connected differently and use a different control technique than the applicant's

invention. Weber steals a portion every full AC cycle based on a rectifier/capacitor combination with a regulator in series with the thyristor input or shunting component to derive DC power in the ON state. As explained above, the applicant's design steals a portion every half or full AC cycle based on a rectifier/capacitor combination with only the regulator. In Weber's design, a variable DC voltage is derived in the ON and OFF states, not a constant DC value. In applicant's design, a constant DC voltage is derive in the ON and OFF states. Microcontrollers wants a constant DC source, otherwise, transients from switching between various DC sources (ON and OFF states) may cause misinterpreted digital data.

The claims were therefore rewritten to point out that applicant's invention derives a constant DC voltage power supply. Claim 21 states: "deriving a source of constant DC voltage from said AC power flow from a small portion of every AC half cycle or full cycle which appears across said thyristor in each of said ON state thereof." Claim 22 states: "for converting a small portion of AC current at the beginning of each half cycle which appears across the thyristor in each of said ON states thereof into a source of constant DC voltage power supply." Claim 25 states: "a constant DC voltage power supply coupled with said thyristor and effective to derive electrical power for said microcontroller from a small portion of every half cycle or full cycle of said AC current which appears across said thyristor in each of said ON state thereof." Claim 26 states: "means for deriving constant DC voltage power supply from a small portion of every half AC cycle or full AC cycle which appears across said thyristor in each of said ON state thereof, and for supplying said constant DC voltage power to said microcontroller." Claim 27 states: "means for deriving

a source of constant DC voltage power from a small portion of every half AC cycle or full AC cycle which appears across said thyristor in each of said ON state thereof."

Weber uses a shunting technique to control the AC power at fix half cycles. Therefore, dimming of the incandescent light only occurs to approximate 50% light level. Applicant's control technique allows for control over any portion of the half or full cycle by providing the gate pulse at specified time. Weber's design is less energy efficient than applicant's design because of this control technique. The gate current pulses in Weber's design are always present in the ON or OFF state. In the OFF state, the gate current pulses are shunted to ground, whereas in applicant's design, the gate current pulse are not present in the OFF state and therefore no energy is used.

The claims were rewritten to point out this distinction as well. Claim 21 states: "a gate current pulse at a specified time dictated by a control unit at any time in said AC half or full cycle and after the deriving said DC voltage and (ii) maintaining said thyristor in said OFF state by not providing gate current pulse thereto." Claim 22 states: "a control means powered by said DC voltage for selectively providing an actuation output at a specified time dictated by the control unit at any time after deriving the said DC voltage power supply from each half cycle of said AC current." Claims 25 and 26 states: "a microcontroller which is programmed to selectively provide or not provide enabling gate current pulses to said thyristor." Claim 27 states: "means responsive to selection of said "mode" position for completing and interrupting said circuit so as to permit flow of current through a thyristor having ON and OFF states connected in said leads so that said

AC electrical load is energized and de-energized in accordance with a predetermined sequence which is programmed into said microcontroller."

In summary, Weber does not show (a) an apparatus or method in which a constant DC voltage power supply is derived from a small portion of each AC half or full cycle or (b) a control technique that selectively controls the thyristor during any specified time within each AC half or full cycle. Applicant therefore respectfully submits that Weber fails to anticipate new claims 21-30.

## CONCLUSION

For the above reasons, the applicant submits that the claims are now in proper form, and that the claims all define patentably over the prior art. Therefore, the applicant submits that this application is now in condition for allowance. Also, the applicant respectively requests a telephone interview to discuss this invention with the examiner at his convenience.

Respectfully submitted,

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